Amendments to the Specification:

Please replace paragraphs **[0004]** with the following rewritten paragraphs:

[0004] The lead-position detecting device disclosed in the above-indicated Japanese patent takes an image of a lead in a direction perpendicular to a lengthwise direction of a free end portion of the lead, obtains a shape of a transverse cross section of the free end portion of the lead, i.e., a cross section thereof taken along a plane perpendicular to the lengthwise direction thereof, and detects a position of the lead based on image data representing the taken image. The lead-position detecting device includes an illuminating device and an image-taking device which are provided at respective positions away from the free end portion of the lead in a direction perpendicular to the lengthwise direction thereof. The illuminating device includes a laser diode, a lens which diffuses a horizontal light emitted by the laser diode, and another lens which converts the diffused light into parallel rays, so that the parallel rays are incident to the free end portion of the lead in a direction perpendicular to the lengthwise direction of the lead. The image-taking device is provided by a linear-image sensor which includes a number of light-sensing elements arranged along a straight line which is spaced from the lead and is perpendicular to the lengthwise direction thereof. The linear-image sensor successively takes respective linear images of respective portions of the lead. The image taking device and the illuminating device are revolved as a unit by a ~~removing~~ revolving device about an axis line parallel to an axis line of the electric component, so that the image-taking device takes respective images of the lead in three directions contained in a plane perpendicular to the lengthwise direction of the lead. Three batches of image data representing the three images of the lead taken in the three directions are processed, that is, the three images obtained from the one lead are processed altogether, so as to determine a transverse-cross-sectional shape of the lead and additionally determine, based on the thus determined shape, a position of the lead.

Please replace paragraph **[0053]** with the following rewritten paragraph:

[0053] According to this feature, the position where the light is incident to the lead can be adjusted ~~without minimizing a~~ with a minimized change in a distance between the outlet and the lead in the direction perpendicular to the lengthwise direction of the lead.

Please replace paragraph **[0069]** with the following rewritten paragraph:

[0069] To the lower end portion of the splined member 154 which projects from the support portion 150, there is fixed a gear 172 which meshes with a gear fixed to the output shaft of a nozzle rotating motor 174 (Fig. 14). The hollow rod 156 is rotated about its axis when the splined member 154 is rotated by the nozzle rotating motor 174. Thus, the component holding head 100 is rotatable about its axis so that the electric component 82 held by the component holding head 100 can be rotated about an axis which extends in the vertical direction perpendicular to the ~~top surface 94~~ outer surface 84 of the electronic component 82, through an almost central part of the ~~top surface 94.~~ outer surface 84. The amount of operation of the nozzle rotating motor 174 is detected by a rotary encoder 176 (Fig. 14).

Please replace paragraph **[0071]** with the following rewritten paragraph:

[0071] The suction nozzle 184 has a sleeve 190 and a suction pipe 192 which is partially fitted in the sleeve 190. The sleeve 190 is fitted at its upper portion in the chuck adapter 180 such that the sleeve 190 is biased by a compression coil spring 198 (hereinafter referred to simply as "spring 198") in a direction that causes an exposed lower portion of the sleeve 190 to be moved away from the lower end of the chuck adapter 180. The spring 198 is interposed between the exposed lower portion of the sleeve 190 and the lower end of the chuck adapter 180. The exposed lower portion of the sleeve 190 has a pair of radially extending lugs 200, which are opposite to each other in a diametric direction of the sleeve 190 and which has a pair of slant surfaces 202 lying in the same plane. The chuck 182 has a pair of pins 204 which engage the respective slant surfaces 202, so that the suction nozzle 184 is

held by the chuck 182 such that the suction nozzle 184 is not axially movable and not rotatable relative to the ~~chuck 180.~~ chuck 182. The spring 198 serves as a biasing device in the form of an elastic member.

Please replace paragraph **[0076]** with the following rewritten paragraph:

[0076] The X-axis slide 106 is provided, as shown in Figs. 1 and 2, with two stationary image-taking systems 240, 242 which are disposed at respective Y-axis positions at which the respective two ballscrews 104 are disposed. Namely, one 240 of the two image-taking systems 240, 242 is located between the component supply device 20 of feeder type and the PWB conveyor 14 (or the printed-wiring board 12 placed thereon), while the other image-taking ~~ssytem 242~~ system 242 is located between the component supply device 22 of tray type and the PWB conveyor 14.

Please replace paragraph **[0084]** with the following rewritten paragraph:

[0084] The support plate 260 supporting the local- illumination device 252 has a through-hole 290 that is formed, in a vertical direction, through a thickness of a central portion of the plate 260 where the respective lights produced by the four projectors 266 intersect one another. Thus, the image-forming light to form an ~~mage~~ image of a lead 92 is incident to the image- forming surface 286 of the component camera 250. The bracket 258 supporting the support plate 260 may be arranged to either have a through-hole aligned with the through-hole 290 of the plate 260, or support the plate 260 at respective positions offset from the through-hole 290, so that the image-forming light is allowed to be incident to the image-forming surface 286 of the component camera 250.

Please replace paragraph **[0086]** with the following rewritten paragraph:

[0086] To the input/output ~~interface 314,~~ interface 312, are also connected various actuators such as the X-axis-direction drive motors 110, the Y-axis-direction drive motor 126, the Z-axis-direction drive motor 164, and the nozzle rotating motor 174, each via a drive

circuit 316. In the present embodiment, those motors 110, 126, 164, 174 are electric servo motors as drive sources. However, those electric motors may be electric rotary motors of other types such as stepping motors, as long as the amounts of operation thereof can be accurately controlled. Electric linear motors may be employed in place of the electric rotary motors. The respective rotation angles of the electric motors 110, 126, 164, 174 are detected by the respective encoders 170, 176, 324, and those electric motors are controlled based on the respective outputs of those encoders.

Please replace paragraph **[0090]** with the following rewritten paragraph:

[0090] The connector 82 is accommodated in the component tray 76 such that the ~~opening 84~~ opening 86 thereof that will provide the upside thereof when the connector 82 is mounted faces upward. When the suction nozzle 184 is lowered, the suction pipe 192 faces the ~~opening 84,~~ opening 86, and eventually the cover member 208 contacts the open end of the body 84 of the connector 82. Since the cover member 208 is larger than the opening 86, the opening 86 is substantially airtightly closed by the cover member 208 contacting the open end of the body 84, so that the cover member 208 and the body 84 cooperate with each other to define a vacuum chamber that communicates with the suction pipe 192. Since the negative pressure is supplied to the vacuum chamber, the connector 82 is sucked by the suction pipe 192 and accordingly is held by the component holding head 100.

Please replace paragraph **[0109]** with the following rewritten paragraph:

[0109] In the illustrated embodiment, the control device 300 determines respective errors of the respective actual positions of the plurality of leads 92 from the respective reference or correct positions thereof, and judges that the connector 82 cannot be mounted on the printed-wiring board 12 if at least one of the respective absolute values of those errors is greater than the reference value. However, the control device 300 may be so modified as to additionally judge whether the respective errors of the respective actual positions of the

leads 92 can be so compensated for by the respective areas of the insertion holes 96 that all the leads 92 can be safely inserted in the holes 96. If a positive judgment is made, the control device 300 determines correction amounts needed to correct or modify the reference amounts of movement of the component holding head 100, and a correction amount needed to correct or modify the angular position of the holding head 100. Since the transverse-cross- sectional transverse cross-sectional area of each hole 96 is larger than that of each lead 92, respective differences between the respective areas of the holes 96 and the respective areas of the leads 92 may compensate for the respective ~~errors the~~ errors of the respective actual positions of the leads 92, thereby allowing the leads 92 to be inserted in the holes 96.

Please replace paragraph **[0110]** with the following rewritten paragraph:

[0110] The control device 300 judges whether the leads 92 of the connector 82 can be inserted in the insertion holes 96 of the printed-wiring ~~board12,~~ board 12, based on the respective amounts, and directions, of the respective errors of the actual positions of the leads 92. For example, in the case where two leads 92 that should have a same position in the Y-axis direction have respective actual positions shown in Fig. 21A, i.e., the two leads 92 are excessively near to each other in the X-axis direction, even if one of the two leads 92 may be inserted in a corresponding hole 96, the other lead 92 cannot be inserted in a corresponding hole 96. Thus, in this case, it is impossible to modify the reference amounts of movement of the holding head 100, or change the angular position of the head 100, so as to assure that all the leads 92 are inserted in the holes 96, respectively. In addition, in the case where two leads 92 that should have a same position in the Y-axis direction have respective actual positions shown in Fig. 21B, i.e., the two leads 92 are excessively distant from each other in the X-axis direction, it is impossible to assure that all the leads 92 are inserted in the holes 96. In the case where two leads 92 that should have a same position in the X-axis direction have respective actual positions shown in Fig. 21C or 21D, i.e., the two leads 92 are excessively

near to, or distant from, each other in the Y-axis direction, it is also impossible to assure that all the leads 92 are inserted in the holes 96. In contrast, in the case where two or more leads have respective angular-positional errors but those angular-positional errors have a same direction about an axis line of the connector 82, as shown in ~~Fig. 12E,~~ Fig. 21E, it is possible to rotate the connector 82 about the axis line thereof and thereby assure that all the leads 92 are inserted in the holes 96. In the last case, the control device 300 calculates a correction angle by which the connector 82 is rotated to assure the insertion of the leads 92. In this case, too, the control device 300 detects respective positional errors of the holes 96 resulting from the positional errors of the printed-wiring board 12, and those positional errors of the holes 96 are compensated for by modifying the reference amounts of movement of the holding head 100 and/or changing the angular position of the head 100, when the connector 82 is mounted on the board 12. In Fig. 21A to 21E, each of the respective cross-sectional shapes of the leads 92 is represented by a circle, for easier illustration purposes only.

Please replace paragraph **[0013]** with the following rewritten paragraph:

[0113] As shown in Fig. 23, the support member 406 includes a flat main body 412 extending along a horizontal plane, and a plurality of (e.g., four) projector-supporting portions 414 extending vertically from an outer peripheral portion of the flat main body 412, perpendicularly to the same 412. As shown in Figs. 24, 25, and 26, the four projector-supporting portions 414 are provided by respective flat members that are detachably attached, with respective attaching devices, not shown, such as bolts, to another flat member providing the flat main body 412, such that a first pair of supporting portions 414 and a second pair of supporting portions 414 are located, as shown in Fig. 22, on opposite sides of the locus of Y-axis-direction movement of the component holding head 100 on the ~~X-side~~ X-axis slide 106, respectively. Each pair of supporting ~~portions 144~~ portions 414 are arranged in the Y-axis direction, and are inclined relative to the Y-axis direction such that respective first end

portions of the supporting ~~portions 144~~ portions 414 that are distant from each other in the Y-axis direction are nearer to the locus of movement of the holding head 100 than the respective second end portions of the ~~same 144.~~ same 414. Thus, the four supporting ~~portions 144~~ portions 414 are so arranged as to define a portion of a closed line surrounding the center of the flat main body 412.

Please replace paragraph **[0132]** with the following rewritten paragraph:

[0132] In the first embodiment shown in Fig. 2, the component holding head 100 holding the electronic component 82 is moved to an arbitrary position in the plane parallel to the surface of the printed-wiring ~~board 512,~~ board 12, so as to mount the component 82 on the ~~board 512.~~ board 12. In this embodiment, stationary local-illumination and image-taking devices may be provided at an image-taking position on, e.g., the machine base 10, and the component holding head 100 may be adapted such that the holding head 100 is moved to the image-taking position where images of leads of the electronic component 82 is taken by the image-taking device.

Please replace paragraph **[0137]** with the following rewritten paragraph:

[0137] The principle of the present invention is additionally applicable to a component mounting apparatus which includes a movable member; a rotatable-table-type component mounting device (e.g., an intermittent-rotation-type component mounting device) that is supported by the movable member and supports a plurality of component holding heads; and a moving device that moves the movable member. In this component mounting apparatus, each of the holding heads is ~~removed~~ revolved about an axis line of the rotatable-table-type component mounting device, while being moved relative to a circuit substrate because of the movement of the movable member. Thus, the holding heads mounts respective electric components on the circuit substrate.